

REMARKS

Applicants have thoroughly considered the Examiner's remarks. Claims 1-38 are presented in the application for further examination. The claims have not been amended.

Reconsideration of the application claims in view of the following remarks is respectfully requested.

The following remarks will follow the sequence of the Office action. The Arabic numerals beginning each paragraph correspond to the numbered paragraphs of the Office action.

Interview Summary:

The undersigned thanks Examiner for the phone interview of January 7, 2008 and the Examiner's voice mail response of January 10, 2008. During the interview, the undersigned questioned the need to disclose a particular advantage to the claimed invention and pointed out that the claims recite an element clearly disclosed and illustrated in the application. In particular, the claims recite that "the selected pixels are different than the particular pixel." It is applicants' position that the Examiner must cite a reference to teach the element or withdrawn the rejection. The undersigned noted that the Office action on page 3 admits the cited Koike reference fails to disclose this element:

from the particular pixel; *{Koike does not disclose expressly the selection of pixels that are different from the particular pixel "X". However, at the time of the invention, it would have*

The Examiner's voice mail response indicated that the rejection would not be withdrawn and that applicants must indicate an advantage.

Applicants disagree and present the following remarks.

Claim Rejections - 35 USC §103

1.-2. Claims 1-13, 15-19 and 21-25, 27-31 and 33-37 stand rejected under 35 USC §103(a) as being obvious over Koike (US 5408338). The Examiner argues that:

Selecting P pixels from the plurality of pixels wherein the selected pixels are different from the particular pixel; [Koike does not disclose expressly the selection of pixels that are different from the particular pixel "X". However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform the operation using only the non-particular pixel since it still smoothes the selected pixel based on a required number of pixel values. Applicant has not disclosed that not using the particular pixel in the calculation provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the particular pixel used as part of the averaging (smoothing) function because both methods result in a value that is based on average of pixels in a particular area. Therefore, it would have been obvious to combine Koike with the knowledge of one of ordinary skill in the art to modify Koike with the use of only the non-particular to obtain the invention as specified in claim 1.]

Independent claims 1, 15 and 27 recite that "the selected pixels are **different** from the particular pixel" in combination with "determining a blurred value as a function of **only** the values of the selected pixels." This combination is not taught by Koike, which is same as the previous art cited by the Examiner and merely suggests nothing more than a box filter.

The Examiner argues that excluding the particular pixel would be obvious "since it still smoothes the selected pixel...." However, the claims do not recite smoothing. The claims specifically recite the **element** of "determining a blurred value as a function of only the values of the selected pixels." Thus, the Examiner must cite a reference which teaches this **element** of the invention or withdraw the rejection.

The Examiner argues that there is no advantage to excluding the particular pixel. Applicants request that the Examiner cite a statute, rule or case that requires that an advantage must be stated for each element of a claim. In particular, applicants note that the claims recite the **element** that "the selected pixels are different than the particular pixel." As pointed out during the interview, it is applicants' position that the Examiner must cite a reference to teach the element or withdrawn the rejection. The Office action on page 3 admits the cited Koike reference fails to disclose this element:

from the particular pixel; *[Koike does not disclose expressly the selection of pixels that are different from the particular pixel "X". However, at the time of the invention, it would have*

Thus, the Examiner has no basis for the § 103 rejection as the Examiner admits for the record that the cited reference fails to disclose this recited element of the claim.

In any case, there are many advantages, as pointed out in the application (emphasis added) and in the example below:

- [0004]: The invention **avoids** the need for channel separation and convolution of the pixels and their color content.
- [0041]: The invention in one embodiment is an algorithm that **operates** on image buffers that represent each pixel as a thirty-two bit value and that have distinct information channels of **eight bits** each (i.e., an ARGB image buffer).
- [0042]: By applying the quick blur filter on a video stream or an image, a **de-focused effect** can be accomplished softening the image and/or the video. Horizontal blurring effects can be accomplished by averaging only the left or right pixel. Vertical blurring effects can be accomplished by averaging only the top and bottom pixels. This provides a horizontal or vertical **softening effect** which can be pleasing to the eye. Blurring can also be used to effect transitions. By applying the invention repeatedly to the same image, or by blurring a blur filter multiple times using a ramp (e.g., blurring the first frame of a transition once, blurring the second frame of a transition twice and, etc.), an **interesting video transition** where video would blur away can be accomplished. Titling blurred shadows is also one embodiment of the invention. Shadows using titling are usually blurred to provide the illusion of shadowing. The invention can be used on titling to accomplish a similar look.

The Examiner argues that the claimed invention would

"perform equally well with the particular pixel used as part of the averaging (smoothing) function because both methods result in a value that is based on average pixels in a particular area."

Applicants disagree for four reasons:

First, the invention operates differently in that the invention only uses **eight (8)** pixels instead of the **nine (9)** pixels used in the box filter. This means different memory and processing requirements.

Second, the invention provides a different way of smoothing. The invention smooths based on adjacent pixel content only, not based on the particular pixel content in combination with adjacent pixel content, as taught by the prior art.

Third, as noted above, the invention provides a different advantages than the prior art. For example, the **defocused, softening effect** is different than the averaging effects of the box filter of the prior art.

Fourth, as noted below by specific example, the invention provides a **different numerical result for pixel values** than the numerical result of the box filter of the prior art.

Important is the **different numerical result for pixel values** when comparing the prior art to the invention. As a simple example, suppose nine (9) adjacent pixels had the following values:

3	3	3
3	1	5
7	7	7

Unsmoothed

According to the prior art, the center pixel (value =1) would be averaged by a box filter by including the center pixel in the computation. The pixels in the unsmoothed table above have a total value of 39. Averaging means $39/9$ (i.e., 4.33), **rounded to 4**, so that a box filter would change the center pixel of the unsmoothed table from **1 to 4**:

3	3	3
3	4	5
7	7	7

Box Filter

According to the invention, the center pixel would be computed by excluding the center pixel in the computation. The pixels in the unsmoothed table above **without** the center pixel have a total value of 38. Averaging means $38/8$ (i.e., 4.75), **rounded to 5**, so that invention would change the center pixel of the unsmoothed table from **1 to 5**:

3	3	3
3	5	5
7	7	7

Invention

Thus, the invention provides a **different numerical result (5)** for the center pixel than the **numerical result (4)** of cited prior art (Kioke) of box filters.

Further, Kioke teaches away from the invention by citing only formulas which include the center pixel X:

Column 4:

In this case, the method of extracting the surrounding pixels and the algorithm are changed on the basis of the scanning line density. For example, if the line density is 8×7.7 lines/mm, the smoothing unit 3 extracts, as shown in part a of FIG. 2, 8 pixels A to H surrounding the selected pixel X. The intensity of the selected pixel X is corrected to the average intensity X' obtained by the following equation. It should be noted that "A, B, . . ." of pixel A, B, etc. hereinafter represent the intensity of each pixel.

$$X' = (X + A + B + C + D + E + F + G) / 8 \quad (1)$$

If the line density is 8×15.4 lines/mm, the smoothing unit 3 extracts, as shown in part b of FIG. 2, 17 pixels A to Q surrounding the selected pixel X. The intensity of the selected pixel X is corrected to the average intensity X' obtained by the following equation.

$$X' = (X + A + B + \dots + M + O + P) / 16 \quad (2)$$

Column 6:

FIG. 7 is an illustration for explaining smoothing performed by the smoothing unit 10 shown in FIG. 5. The illustration indicated by part a in FIG. 7 shows a state where the intensities of pixels A, D, and F are higher than the intensities of the other pixels B, C, X, E, G, and H, that is, a contour of the picture is positioned to the left of the selected pixel X. In this case, the intensity of the selected pixel X is corrected to X' obtained by the following equation.

$$X' = (3 \cdot X + B + C + E + G + H) / 8 \quad (3)$$

The illustration indicated by part b in FIG. 7 shows a state where the intensities of the other pixels A, B, and C are higher than the intensities of the other pixels X, D, E, F, G, and H, that is, a contour of the picture is positioned above the selected pixel X. In this case, the intensity of the selected pixel X is corrected to X' obtained by the following equation.

$$X' = (3 \cdot X + D + E + F + G + H) / 8 \quad (4)$$

Column 7:

intensity of the selected pixel X is corrected to X' obtained by the following equation.

$$X' = (3 \cdot X + C + E + F + G + H) / 8$$

5

Column 8:

FIG. 10 is an illustration for explaining the correction method of the MTF correcting unit 12. The illustration indicated by part a in FIG. 10 shows a state where the intensities of pixels B, X, and G are higher than the intensities of the other pixels A, C, D, E, F, and H, that is, a fine line of the picture extends in a vertical direction passing through the selected pixel X. In this case, the intensity of the selected pixel X is corrected to X' obtained by the following equation.

$$X' = 3 \cdot X - (D + E)$$

The illustration indicated by part b in FIG. 10 shows a state where the intensities of pixels D, X, and E are higher than intensities of the other pixels A, B, C, F, G, and H, that is, a fine line of the picture extends in a horizontal direction passing through the selected pixel X. In this case, the intensity of the selected pixel X is corrected to X' obtained by the following equation.

$$X' = 3 \cdot X - (B + G)$$

The illustration indicated by part c in FIG. 10 shows a state where the intensities of pixels C, X, and F are higher than the intensities of the other pixels A, B, D, E, G, and H, that is, a fine line of the picture extends in a slanting direction passing through the selected pixel X from lower left to upper right. In this case, the intensity of the selected pixel X is corrected to X' obtained by the following equation.

$$X' = 3 \cdot X - (A + H)$$

Thus, independent claims 1, 15 and 27 are patentable over Koike and the remaining claims are patentable based on their dependency from the independent claims 1, 15 and 27.

3. Claims 14, 20, 26, 32 and 38 stand rejected under 35 USC §103(a) as being unpatentable over Koike in view of Kawano (US 6480302). The Examiner cites Kawano as teaching

components. However, Kawano discloses an image processing method and apparatus that operates on each pixel of a grayscale image. Furthermore, Kawano discloses in lines 24-44 of column 19 that it is possible to operate on a color image using a grayscale technique or apparatus by dividing the image up into its color channels (components) and operating on each channel individually in parallel in each of the image processing units. Since a color image is essentially just multiple separate images (image channels) wherein each separate channel is an image in that specific color channel. Thus an RGB color channel has a Red image, a Green image, and a Blue image. At the time of the invention it was well within the knowledge of one of ordinary skill of the art to process color images by processing each channel separately with a process designed for a grayscale image as is taught by Kawano. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Kawano with Koike to perform the efficient grayscale (single channel) smoothing method on a color (multiple channel) image.

However, the Examiner admits that Kawano operates on each pixel whereas the invention does not. Thus, Kawano teaches away from the invention and the combination of Koike and Kawano does not make any of the claims obvious.

Applicants again note that the Examiner has not cited any art which teaches the recited **element** of excluding the particular pixel, as recited by the amended claims. "[T]he question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." *Lindemann MaschinenFabrick GMBH v. American Hoist and Derrick Company*, 730 F.2d 1452, 1462; 221 U.S.P.Q. 481, 488 (Fed. Cir. 1984). As has been shown, the non-analogous teachings of the prior art relate to including the particular pixel in the combination. Therefore, nothing in the cited references suggest their combination to exclude the particular pixel. Indeed, the Examiner failed to cite any basis whatsoever for combining these references in a way that would suggest excluding the center pixel. In fact, the Examiner's rejection provides a text book example of impermissible hindsight analysis -- the Examiner used the invention as defined by the claims as a guide in order to reject the claims. See *In re Oetiker*, 977 F.2d at 1447; 24 U.S.P.Q.2d at 1446 ("There must be some reason,

suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself.").

Thus, Applicants submit that the claims are patentable and the rejection of claims 1-38 should be withdrawn because each independent claim recites that "the selected pixels are **different** from the particular pixel" in combination with "determining a blurred value as a function of **only** the values of the selected pixels."

Applicants wish to expedite prosecution of this application. If the Examiner deems the application to not be in condition for allowance, the Examiner is invited and encouraged to telephone the undersigned to discuss making an Examiner's amendment to place the application in condition for allowance.

It is felt that a full and complete response has been made to the Office action and, as such, places the application in condition for allowance. Such allowance is hereby respectfully requested. If the Examiner feels, for any reason, that a personal interview will expedite the prosecution of this application, he is invited to telephone the undersigned.

Applicants do not believe that a fee is due in connection with this response. If, however, the Commissioner determines that a fee is due, he is authorized to charge Deposit Account No. 19-1345.

Respectfully submitted,

/Frank R. Agovino/

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